

**REPORT**

# Closure Plan

*Middle Peninsula Landfill - SWP No. 572*

Submitted to:

**Middle Peninsula Landfill**

3714 Waste Management Way

Glenns, Virginia 23149



Submitted by:

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## 1.0 PURPOSE

This Closure Plan has been prepared for the Middle Peninsula Landfill (Facility) located in Gloucester County, Virginia. The landfill operates as a municipal solid waste landfill under Virginia Solid Waste Permit No. 572. Golder Associates Inc. has prepared this Plan for Waste Management Disposal Services of Virginia, Inc. (Waste Management).

The permitted bottom liner system replaces the 2-foot thick compacted clay layer with a geosynthetic clay liner (GCL). The permitted bottom liner system will still incorporate a 60-mil high density polyethylene (HDPE) geomembrane.

Additionally, four alternate final cover systems are permitted, which feature the following infiltration layer components:

<b>Side Slope Alternate Final Cover System 1:</b>	50-mil Agru Super Gripnet® Linear Low-Density Polyethylene (LLDPE) geomembrane overlain by an 8-ounce (oz), heat-burnished non-woven geotextile
<b>Side Slope Alternate Final Cover System 2:</b>	40-mil textured LLDPE geomembrane overlain by a 275-mil geocomposite
<b>Top Deck Alternate Final Cover System 1:</b>	GCL overlain by a 50-mil Agru Micro DrainLiner® LLDPE geomembrane overlain by an 8-oz, heat-burnished non-woven geotextile
<b>Top Deck Alternate Final Cover System 2:</b>	GCL overlain by a 40-mil textured LLDPE geomembrane overlain by a 275-mil geocomposite

The permitted infiltration layer components of the final cover systems will be placed directly on a minimum 12-inch controlled subgrade, of which 6 inches may consist of re-worked intermediate cover, and will be covered with 18 inches of protective cover soil and 6 inches of vegetative support soil. Side Slope Alternate Final Cover Systems 1 and 2 are permitted for use on the side slope and bench areas of the landfill, specifically slopes of 4 horizontal to 1 vertical (4H:1V) or steeper, and Top Deck Alternate Final Cover Systems 1 and 2 are permitted for use on the top deck areas of the landfill at approximately 5% slope.

## 1.1 Closure Plan Implementation

The two disposal areas at the Middle Peninsula Landfill, Disposal Area A and Disposal Area B, will be developed and closed in stages when the disposal areas reach their final grades as shown in the Permit Drawings.

The goal of the final cover design at the Facility is to provide a low maintenance cover system with adequate stormwater run-off controls to prevent erosion and exposure of the final cover infiltration layer components and underlying waste. The maximum facility side slope grade is 3-foot horizontal to 1-foot vertical (3H:1V), with stormwater benches that are designed to intercept sheet flow from the final cover before it can concentrate into an erosive flow. Vegetation will be established and maintained on the protective cover soil layer for all capped areas of the landfill.

The primary components of Side Slope Alternate Final Cover System 1 are a 50-mil Agru Super Gripnet® geomembrane overlain by an 8-oz heat-burnished geotextile, which provides drainage for the overlying 24-inch erosion layer. Side Slope Alternate Final Cover System 2 features a textured 40-mil LLDPE geomembrane and a drainage geocomposite. The textured LLDPE geomembrane is overlain by a 275-mil geocomposite that provides drainage.

Top Deck Alternate Final Cover System 1 features a GCL overlain by a 50-mil Agru Micro DrainLiner® LLDPE geomembrane overlain by an 8-oz, heat-burnished geotextile. The drainage studs built in to the Micro DrainLiner® geomembrane provide drainage for the overlying 24-inch erosion layer. Top Deck Alternate Final Cover System 2 features a textured 40-mil LLDPE geomembrane and a 275-mil drainage geocomposite. Both of the top deck final cover systems include a GCL.

Progressive slope closure activities will occur throughout the life of the Facility. Generally, once approximately 15 to 20 acres of a landfill area reach final grades, that portion will be scheduled for closure. This process will be repeated until the landfill reaches its final design capacity and the last area of the Facility is closed with its final cover system.

The implementation process for progressive closure projects includes the following activities:

- Preparation of closure construction bid documents
- Selection of the prime contractor and finalization of construction documents
- Construction of the required final cover system
- Construction and modification of ditches and drainage controls
- Construction of landfill gas extraction wells, as necessary
- Submission of the closure certification documents
- Establishment of vegetation on the final cover system

Closure activities are considered initiated upon selection of the prime construction contractor.

## 2.0 CLOSURE TIMEFRAME

Prior to initiating final closure activities, and at least 180 days prior to beginning closure of a disposal unit, the Department of Environmental Quality (DEQ) will be notified of the intent to close. The closure of the Facility will be

conducted in progressive phases. Each closure phase will be initiated once an approximately 15- to 20-acre area reaches final permitted grade, as determined by either an annual aerial or field survey. Final closure of these areas should be performed during the subsequent construction season and be completed within that season.

As stated in the Virginia Solid Waste Management Regulations (VSWMR), final cover construction shall be initiated when the following conditions apply:

- An additional lift of solid waste is not to be applied within 1 year, or a longer period as required by the Facility's phased development, as described above
- Any area of the landfill attains final elevation and within 90 days after such elevation is reached, or longer if specified in the Facility's approved Closure Plan, as described above
- Within 90 days of the Facility's permit's termination or denial

Closure of the Facility will be completed in accordance with this Closure Plan and should be within 6 months after initiation of the closure construction activities. If an extension of the closure construction time frame is needed, Waste Management will petition the DEQ.

The Airspace and Life of Site Table provided in Attachment 1 contains a listing of approximate capacities and life expectancies for each phase. Although a specific phase may not be ready in its entirety to close at the end of its estimated life, the listing provides a reasonable approximation of when major progressive side slope closure projects will occur. Interim or small closure projects may also occur year to year when an area has reached final grade and the partial closure benefits operations, landfill gas recovery, or erosion control. Based on current operating conditions, the remaining life of the Facility is approximately 34 years from the date of this July 2021 permit amendment.

## **2.1 Inventory Removal and Disposal**

Facility equipment and temporary structures used during normal operations will be removed after their usefulness ends. Lubricants, fuel, waste oil, and other residues generated as part of Facility operations will be managed and disposed of appropriately. Operational equipment should not require decontamination, and routine equipment maintenance will be performed to minimize the risk of contamination from lubricants or fuel oil used at the Facility.

## **2.2 Closure of Surface Impoundments**

The sediment basin/stormwater basins serving the Facility will have accumulated sediment removed, and the basins will be transitioned to permanent stormwater management ponds at the time of closure. The ponds will be left in place to provide stormwater control for the site after closure.

There are no leachate or waste treatment lagoons at this Facility.

## 3.0 CLOSURE OF LANDFILL UNITS

### 3.1 Final Cover Design

The final cover system will be placed on a minimum 12-inch-thick controlled subgrade, approximately 6 inches of which will consist of re-worked intermediate cover soil.

### 3.2 Alternate Final Cover Design

Four alternate final cover systems are permitted for use on the side slopes and top deck areas of the landfill. Side Slope Alternate Final Cover Systems 1 and 2 are permitted for use on the side slope areas, specifically slopes steeper than 4H:1V, and Top Deck Alternate Final Cover Systems 1 and 2 are permitted for use on the top deck areas at approximately 5% slope. The complete final cover system components for each alternate final cover system are shown, from the top down, below.

#### Side Slope Alternate Final Cover System 1 – LLDPE Super Gripnet® Geomembrane

- 24-inch Erosion Layer consisting of a 6-inch Vegetative Support Layer over 18 inches of protective cover soil
- 8-oz heat-burnished non-woven geotextile, placed with the heat-burnished side down
- 50-mil LLDPE Super Gripnet® geomembrane (combined drainage and infiltration layers)
- 12-inch controlled subgrade (approximately 6 inches of which may be re-worked intermediate cover)

#### Side Slope Alternate Final Cover System 2 – LLDPE Geomembrane with Geocomposite

- 24-inch Erosion Layer consisting of a 6-inch Vegetative Support Layer over 18 inches of protective cover soil
- 275-mil Geocomposite with a minimum transmissivity of  $7 \times 10^{-4}$  m<sup>2</sup>/s (drainage layer)
- 40-mil textured LLDPE geomembrane (infiltration layer)
- 12-inch controlled subgrade (approximately 6 inches of which may be re-worked intermediate cover)

#### Top Deck Alternate Final Cover System 1 – LLDPE Micro DrainLiner® Geomembrane and GCL

- 24-inch Erosion Layer consisting of a 6-inch Vegetative Support Layer over 18 inches of protective cover soil
- 8-oz heat-burnished non-woven geotextile, placed with the heat-burnished side down
- 50-mil LLDPE Micro DrainLiner® geomembrane (combined drainage and infiltration layers)
- GCL with maximum permeability of  $5.0 \times 10^{-9}$  cm/s
- Prepared intermediate cover subgrade

#### Top Deck Alternate Final Cover System 2 – LLDPE Geomembrane with Geocomposite

- 24-inch Erosion Layer consisting of a 6-inch Vegetative Support Layer over 18 inches of protective cover soil

- 275-mil Geocomposite with a minimum transmissivity of  $7 \times 10^{-4}$  m<sup>2</sup>/s (drainage layer)
- 40-mil textured LLDPE geomembrane (infiltration layer)
- GCL with maximum permeability of  $5.0 \times 10^{-9}$  cm/s
- Prepared intermediate cover subgrade

### 3.3 Components of the Final Cover Systems

The alternate final cover systems consist of the following described components. A demonstration showing the veneer stability of the permitted alternate final cover systems is included in Attachment 2.

#### 3.3.1 Intermediate Cover Subgrade

The existing intermediate cover will be tested for thickness prior to closure to ensure a minimum 12-inch thickness. For Side Slope Alternate Final Cover Systems 1 and 2, the top 6 inches (approximate) of the intermediate cover will be re-worked as part of the controlled subgrade (see below), maintaining a minimum thickness of intermediate cover of 6 inches. Top Deck Alternate Final Cover Systems 1 and 2 will maintain the minimum 12 inches of intermediate cover as the GCL subgrade. The subgrades shall contain no large protruding objects and will be scarified prior to placing the infiltration layer.

#### 3.3.2 Controlled Subgrade

The subgrades for Side Slope Alternate Final Cover Systems 1 and 2 will consist of approximately 6 inches of re-worked intermediate cover soil and 6 inches of additional soil for a total thickness of 12 inches, while the top deck alternate final cover systems will be placed directly on the intermediate cover. The subgrades for both the top deck and side slope alternate final cover system shall contain particles no larger than ½ inch in their greatest dimension, unless otherwise approved by the Engineer, and be free of organic materials. Liner subgrade materials shall consist of soil materials having a USCS classification of SC, ML, CL, MH, or CH.

#### 3.3.3 Infiltration Layer (GCL)

The two top deck alternate final cover systems include a GCL. The GCL consists of bentonite encapsulated between two stitched geosynthetic fabrics. The GCL will have a permeability less than or equal to  $5 \times 10^{-9}$  cm/s. Prior to placing the GCL, the intermediate cover subgrade must be certified by the installer and construction quality assurance (CQA) consultant. Care shall be taken during installation of the GCL to prevent exposure to excessive moisture that may damage the clay material.

#### 3.3.4 Infiltration Layer (Geomembrane)

The four alternate final cover systems include geomembranes as the primary infiltration layer. The geomembranes are constructed from LLDPE material, and shall conform to the standards contained in the Technical Specifications. Geomembrane installation shall conform to the practices outlined in the Technical Specifications and the CQA Plan.

A demonstration showing the adequacy of the permitted geomembrane infiltration layer components for the permitted alternate final cover systems is included in the Alternate Final Cover Demonstration.

### **3.3.5 Drainage Layer**

For areas being capped with the Super Gripnet® or Micro DrainLiner® geomembrane, the drainage layer is incorporated with the geomembrane. These geomembranes include 130-mil drainage “studs” on the top surface, which provide drainage. The drainage studs are overlain by a heat-burnished geotextile, which provides separation and filtration from the protective cover soil layer. A demonstration showing the adequacy of the permitted drainage layers is included in the Alternate Final Cover Demonstration.

Areas using the 40-mil LLDPE geomembrane will use a 275-mil double-sided geocomposite as the drainage layer. This geocomposite will be installed on top of the textured geomembrane layer to provide drainage for the protective cover soil, as specified in the Technical Specifications. The geocomposite will prevent the cover soils from becoming saturated, which will help prevent slope failure. The geocomposite will drain into either the perimeter channel at the toe of the slope or on the drainage benches, as necessary, to control the head build-up on the geomembrane liner. This collected water will not be exposed to the waste and can be treated as ordinary stormwater.

### **3.3.6 Erosion Layer**

The 24-inch erosion layer will be constructed of on-site soils or approved off-site borrow material. The bottom 18 inches of protective cover soils will be placed and compacted to at least 90% of its Standard Proctor Density, in accordance with the Technical Specifications. The upper 6 inches comprise the vegetative support layer, and will not be compacted so as to promote root development.

#### **3.3.6.1 Vegetative Support Layer**

The top 6 inches of the 24-inch erosion layer will be the vegetative support layer soil. This soil will be placed, but not compacted, and then seeded in accordance with the Technical Specifications, or with a site-specific mixture based on recommendations from a soils report. In either case, the seed mixture will consist mainly of turf-type grasses and nurse crops that will lend themselves to quickly establishing a healthy stand of grass. Woody vegetation is not allowed on the final cover system. Established vegetation will be maintained by mowing and application of fertilizer as required to maintain a healthy stand of vegetation.

#### **3.3.6.2 Erosion Layer Performance**

The erosion layer soils will consist of soils that are fine-grained loamy soils that generally exhibit some degree of plasticity and are classified as low to moderately erodible by wind and water. The calculated soil loss using the Revised Universal Soil Loss Equation (RUSLE) is 1.92 tons per acre per year. Calculations for the RUSLE are included in Attachment 3.

The 24-inch thickness of the erosion layer soils is sufficiently thick to protect the underlying geosynthetics from



freezing. The maximum anticipated depth of frost penetration for Tidewater Virginia is approximately 18 inches (0.5 meter).

### 3.3.7 Erosion and Sediment Control

Erosion and Sediment Control will be performed in accordance with the current edition of the Virginia Erosion and Sediment Control Handbook (VESCH). Typically, this will involve the construction and maintenance of stormwater diversions, temporary and permanent seeding, and stone outlet protection, as shown in the Permit Drawings.

Vegetation will be established in accordance with the Technical Specifications to provide protection from direct raindrop erosion. Prior to seeding, the vegetative support layer will be roughened by tracking a bulldozer up and down the slopes, providing a surface of small depressions that will aid in establishing vegetative cover and slowing run-off. Until vegetation can be established, mulch or temporary erosion matting, as appropriate, will be installed over the seeded surface.

Calculations for the stormwater diversion and collection systems are included in the Design Report . Erosion and sediment control details are included on Drawings 45, 45a, and 46 of the Permit Drawings.

## 3.4 Final Slopes

The maximum final design slope for the Facility is 3H:1V. The minimum final grade on the top deck per the closure design is 5%. Stormwater diversion channels are located at the change in grade on the top deck and on the side slopes to intercept and collect sheet flow run-off before it concentrates into erosive shallow concentrated flow. The Permit Drawings show the final grades of the Facility and the design details for the stormwater management system.

Assuming the protective cover layer will be advanced along the entire length of the side slope (for a maximum slope length of 150 feet) while maintaining the prescribed factors of safety for operational conditions, the minimum peak interface friction angle for any interface within the permitted slope liner system must be at least 25.8 degrees, with no adhesion. Calculations for the veneer stability of the final cover system are provided in Attachment 2. The site is not located in a seismic impact zone as defined by the USGS.

Staged construction may be required if the interface friction angle testing prior to construction shows any of the interfaces to be less than 25.8 degrees and/or equivalent strength of the addition of adhesion is used as appropriate for the construction material.

## 3.5 Run-Off Controls

The stormwater control measures include drainage channels, armored downchutes and/or HDPE pipe slope drains, and sediment basins. Sheet flow from the final cover surface will be collected in a series of drainage channels located at the change in grade on the top deck and on the side slopes of the landfill. These channels are constructed with soil and are sized to convey the run-off from at least the 25-year, 24-hour storm event and prevent overtopping

during the 100-year storm event. The drainage channels are lined with a non-biodegradable erosion control matting to resist erosion and support vegetative growth. The minimum longitudinal slope of the drainage channels is one percent. The channels transport the stormwater to either an armored downchute or to HDPE pipe slope drains. The downchutes and slope drains carry the stormwater to perimeter channels, which drain to the site's sediment/stormwater basins for attenuation and discharge through the Virginia Pollutant Discharge Elimination System (VPDES) permitted outfalls. Attachment 4 includes a stormwater analysis that demonstrates the adequacy of the permitted stormwater drainage systems to effectively handle post-development stormwater events.

### 3.5.1 Drainage Structure Maintenance

Maintenance of the site's drainage structures will include routine inspections as directed by the Operations Plan to identify areas of erosion, undercutting, or other maintenance needs. Additional inspections may be required after large storm events to check for damage. Specific items to be inspected include:

- Culvert inlets for accumulated sediment or debris
- Diversion berms for erosion and establishment of vegetation
- Downchutes for erosion or deterioration
- Slope drain pipes for proper anchorage, leaking joints, undercutting
- Vegetation in other areas for proper establishment, need of mowing
- Perimeter channels for erosion and establishment of vegetation
- Energy dissipation and drop inlet structures for integrity and accumulated sediment
- Other temporary controls (e.g., silt fence) for proper function and sediment control

Activities to correct or repair identified deficiencies will be initiated as soon as practicable. Additional time may be required to correct larger deficiencies or if additional drainage structure construction is required. Sediment removed during maintenance or repair activities will be handled according to the nature of the sediment. For the stormwater basins, the level of accumulated sediment will be monitored on a regular basis through visual inspection. The removal of accumulated sediment can be performed as necessary.

## 3.6 Settlement, Subsidence, and Displacement

The final cover has been designed to account for settlement and subsidence. An analysis was previously performed (Rust, 1993) to determine both total and differential post-development settlement within the landfill. The calculations are based on the design subgrade elevations and the final development grades of the landfill surface. The maximum total settlements of the base grade under the highest fill area (the center of the landfill) were estimated to be about 4.19 feet in Disposal Area A and 2.8 feet in Disposal Area B.

The final cap may experience some settlement relative to base grade settlement and potential waste consolidation. Settlement associated with base grade settlement should be uniform and not adversely affect the final cover system. Settlement associated with waste consolidation will have occurred shortly after landfilling.

The final cover has been designed with LLDPE geomembrane, which provides good protection against liner failure due to differential settlement. Non-uniform settlement may warrant occasional re-grading and/or repair to the soil layer above the cap to maintain drainage. The overall effectiveness of the geomembrane liner at minimizing liquid infiltration will not be jeopardized by non-uniform differential settlement.

## 4.0 CLOSURE OF STORAGE/TREATMENT UNITS

The existing recycling center operates under Permit-by-Rule No. 125, and is not included in this permit modification.

## 5.0 SCHEDULE FOR CLOSURE

Final closure activities, as opposed to progressive closures of individual 15- to 20-acre phases, will begin within the regulatory 30 days of the landfill receiving its final load of waste, or, if the Facility has remaining capacity and there is a reasonable likelihood that the Facility will receive additional waste, no later than one year after the most recent receipt of waste. The DEQ may approve a longer closure period if it is demonstrated that the required or planned closure activities will take longer than the regulatory 180 days (9VAC20-81-160.B) to complete, and that steps have been taken to eliminate any significant threat to human health and the environment from the unclosed, but inactive, landfill. A 12-month closure period is requested under this Plan. A Professional Engineer licensed in the Commonwealth of Virginia and representing the Facility will provide the DEQ with certification of the closure.

Each progressive closure phase will be initiated once an approximately 15- to 20-acre area reaches final permitted grade, as determined by either an annual aerial or field survey. The progressive closure construction activity for each cycle of closure is anticipated to take approximately 9 to 12 months to complete, based on construction experience of similarly sized landfill closure projects. Minimizing the waste exposure during closure cap construction to prevent erosion from rain and wind will be accomplished by methods such as:

- Installing stormwater run-off and run-on controls such as temporary diversion berms, silt fencing, slope drains, and sediment trapping measures as required by the specific construction activity
- Sequencing the stripping of soil and fine grading for cap construction such that it occurs during periods of favorable weather
- Limiting exposed areas to those that can be covered with geosynthetics in a short amount of time

## 6.0 CLOSURE IMPLEMENTATION

### 6.1 Closure Posting

One sign will be posted at the site entrance to the Facility notifying all persons of the final closure of the Facility and prohibition against further receipt of waste. Unauthorized access to the site will be controlled by fencing, as needed, and lockable gates across the access roads.

### 6.2 Notification

Gloucester County, Virginia will be notified upon the completion of closure of the Facility. The survey plat will be prepared showing the final closure grades, as well as the locations of the groundwater monitoring wells and gas

well probes. The survey plat and deed will have the following notification language:

**This property has been used for the management and disposal of solid waste. Any future use of the site shall not disturb the integrity of the final cover, liners, or any other components of the containment systems, or the function of the monitoring system unless necessary to comply with the Virginia Solid Waste Management Regulations or approved by the Department of Environmental Quality.**

### 6.3 Certification

Upon completion of closure construction, a certification statement, signed by a Professional Engineer licensed in the Commonwealth of Virginia, will be submitted to the DEQ along with the results of the CQA Plan. The certification statement should generally read as follows:

**I certify that closure has been completed in accordance with the Closure Plan dated [DATE] for permit number 572 issued to Waste Management Disposal Services of Virginia, Inc., with the exception of the following discrepancies:**

**In addition, a sign(s) was (were) posted on [DATE] at the landfill entrance notifying all persons of the closing [and state other notification procedures if applicable] and barriers [indicate type] were installed at [location] to prevent new waste from being deposited.**

**A survey plat prepared by [NAME] was submitted to the Gloucester County, Virginia on [DATE]. A copy of the survey plat is included with this certification.**

**A notation was recorded on the deed to the landfill property on [DATE]. A copy of the revised deed is attached to this certification.**

**[Signature, date and stamp of Professional Engineer]**

### 7.0 COST ESTIMATE

The estimated cost for closure of the landfill is \$11,491,549. Waste Management will hire a construction contractor to provide closure construction services. Calculations for the closure cost estimate are included in Attachment 5 of this Closure Plan.



**[golder.com](http://golder.com)**

**Attachment 1**

**Airspace and Life of Site Table**

**Middle Peninsula Landfill  
Airspace and Life of Site Table**

FILL PHASE	NEW CELLS CONSTRUCTED DURING PHASE DEVELOPMENT	PHASE LINER AREA (AT LIMITS OF WASTE) (AC)	PHASE FINAL COVER AREA (AT LIMITS OF WASTE) (AC)	GROSS AIRSPACE (CY)	LINER SYSTEM (CY)	FINAL COVER SYSTEM (CY)	NET AIRSPACE (WASTE, DAILY COVER & INTERMEDIATE COVER) (CY)	PHASE LIFE (YEARS)
<b>AREA A</b>								
1-3	1-11	101.4	22.9	10,906,600	572,572	129,309	10,204,719	21.0
4	12-13	16.5	29.6	3,387,300	39,930	119,387	3,227,983	3.8
5	14-15	16.3	20.1	5,051,700	39,446	81,070	4,931,184	5.9
6	16-17	15.7	10.0	3,914,600	37,994	40,333	3,836,273	5.0
7	18-19	15.7	19.3	4,333,600	37,994	77,843	4,217,763	5.5
8	N/A	0	63.7	6,700,000	0	252,083	6,447,917	8.4
<b>AREA A SUBTOTALS</b>		<b>165.6</b>	<b>165.6</b>	<b>34,293,800</b>	<b>727,936</b>	<b>700,025</b>	<b>32,865,839</b>	<b>49.5</b>
<b>AREA B</b>								
9	20-23	39.2	8.0	1,518,600	94,864	32,267	1,391,469	1.8
10	24-26	19.8	14.0	2,975,200	47,916	56,467	2,870,817	3.7
11	N/A	0.0	37.0	4,182,500	0	146,813	4,035,687	5.2
<b>AREA B SUBTOTALS</b>		<b>59.0</b>	<b>59.0</b>	<b>8,676,300</b>	<b>142,780</b>	<b>235,547</b>	<b>8,297,973</b>	<b>10.8</b>
<b>TOTALS</b>		<b>224.6</b>	<b>224.6</b>	<b>42,970,100</b>	<b>870,716</b>	<b>935,572</b>	<b>41,163,812</b>	<b>60.3</b>

Notes:

Fill Phases 8 and 11 consist of filling atop previously constructed cells. No new cell construction is included in these fill phases.

According to the previously approved Solid Waste Permit, the Middle Peninsula Landfill has an allowable approved capacity of 46.3 million cubic yards, which may not be exceeded.

Notes

Liner Thickness: 3.5 ft. for Phases 1-3; 1.5 ft. for Phases 4-11  
 Cap Thickness: 3.5 ft. for Phases 1-3; 2.5 ft. (sideslopes) and 2.0' (top deck) for Phases 4-11  
 Phase Life (max. tons per year): 693,000  
 Phase Life (max. tons per day): 4,000  
 Phase Life (waste density): 0.9 (tons per CY)  
 Phase Life (CY per year): 770,000

**Attachment 5**

**Stormwater Analysis**

**[AS PER THE PART B MAJOR PERMIT MODIFICATION DATED AUGUST 2021, SEDIMENT BASINS  
ARE RENUMERED IN ACCORDANCE WITH THE TABLE BELOW]**

<b>Basin Pre-2021 Permit Modification</b>	<b>Basin Post-2021 Permit Modification</b>
Basin 3	Forebay
Borrow Area	Basin 6
Basin 4	Basin 5
Basin 5	Basin 10
Basin 6	Basin 12
Basin 7	Basin 11
Basin 8	Basin 13